Bardzell's "Feminist HCI" Legacy: Analyzing Citational Patterns

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Abstract

In this late-breaking work, we describe the legacy of feminist theory within HCI literature, focusing on Shaowen Bardzell's seminal publication "*Feminist HCI: Taking Stock and Outlining an Agenda for Design*," which was one of the first to propose adoption of feminist theories into HCI research and practice. We conducted a citation analysis of 70 published texts that cited this paper, using the Harwood functions to identify how feminist theory concepts have been cited in HCI and whether the implementation of proposed frameworks has taken place. This paper was mostly given 'credit,' and most frequently 'signposted' to keep readers on track of the topical issues in HCI, with little evidence of explicit use or extension of proposed frameworks. These results demonstrate a largely one-dimensional impact, characterized by a lack of deep engagement in feminist theories. We identify opportunities to expand feminist approach to further improve research and practice in HCI.

Author Keywords

Feminist theory; citation analysis; Feminist HCI.

Introduction

In the past decade, HCI scholarship has increasingly explored feminist theories as a part of a "turn to critical(ity)" [12, 18, 22], with the goals of expanding the field's conceptual vocabulary and improving design practices. HCI re-

Harwood Citation Functions

1. Signposting: Directing readers to other sources

2. Supporting: Helping authors justify their topic

3. Credit: Acknowledging authors' debt to others for ideas or methods

4. Position: Allowing authors to explicate researchers' standpoints in detail

5. Engaging: Having critical dialogue with their sources

6. Building: Using sources' methods or ideas as foundations

7. Tying: Aligning source's methodology or schools of thought

8. Advertising: Alerting author's earlier work

9. Future: Establishing future research plans

10. Competence: Displaying author's knowledge of the field

11. Topical: Showing research is concerned with state-of-the-art issues

Table 1: Descriptions of Harwood Citation Functions [13]

searchers have increasingly adopted or translated theories from multiple related fields such as anthropology, psychology, computer science, and human sciences [18], and "third wave" HCI scholarship [12] has also engaged with the potential intersections and adoption of critical theory, ethics and values, and reflexivity in HCI research and practice. As part of this shift, critically-focused researchers have translated and adopted feminist theories—part of a larger strand of critical theory-inspired approaches—the most prominent of which was proposed as "Feminist HCI" [2–4]. While there has been substantial critically-focused research and design work resonant with third-wave ideals of reflexivity and criticality, the propagation and patterns of adoption of feminist theories in HCI is understudied. To describe how feminist approaches have been represented in HCI research, we answer the following research questions: How is feminist theory cited in HCI scholarship? In what way(s) are HCI researchers citing Bardzell's 2010 Feminist HCI paper?; and How might the study of citation functions inform the propagation of feminist theory in interdisciplinary HCI research?

To address these research goals, we conducted a citation analysis of Bardzell's 2010 pioneering Feminist HCI paper [4]. Citation analysis is a common research method in information science [6, 7, 16], and has been successfully used in social work [1] and design [5] contexts. One of the primary uses of this method is "[q]ualitative and quantitative evaluation of scientists, publications, and scientific institutions" [16], which can be used "to better analyze the rich sociocultural context of research behavior" [24]. In our context, citation analysis will aid in our attempt to describe how "Feminist HCI" and related feminist concepts are cited and described in HCI scholarship.

The contribution of this late-breaking work is two-fold: 1) To identify and describe the patterns of citations of the 2010 Bardzell paper and describe how these citations in the citee's work function in representing feminist concepts in HCI research; and 2) To illustrate how feminist concepts have propagated in HCI scholarship, and identify how Bardzell's frameworks have been used to frame critically-focused HCI research and design practices. Each of these contributions extends the field's collective understanding of critically-focused research practices, and provides a foundation for future theoretical, conceptual, and pragmatic work that relates to feminist theory in an HCI context.

About Bardzell's 2010 Paper

In Shaowen Bardzell's 2010 paper titled "Feminist HCI: Taking Stock and Outlining an Agenda for Design" [4], she summarizes the state of the art of feminism in HCI, describes the use of feminist theory in analogous fields, and proposes a set of contribution criteria and feminist interaction design qualities to improve HCI research and design practice. This pioneering work, chosen for its high citation count and novelty, proposes the need for and possible means of adoption of feminist theories in HCI through two frameworks: (1) *Contribution Criteria* (ways in which feminist theories and methods might contribute to HCI): *Theory, Methodology, User Research and Evaluation* [4]; and (2) *Feminist Interaction Design Qualities* (attributes of a feminist interaction paradigm): *Pluralism, Participation, Advocacy, Ecology, Embodiment, and Self-Disclosure* [4]. We refer to these two frameworks throughout this paper, and use them for analysis purposes as *a priori* themes in extension to the citation analysis to illustrate how Bardzell's proposed frameworks have been implemented in HCI research.

Our Approach

To answer our research questions, we conducted a citation analysis of 70 published conference proceedings that cited Bardzell's 2010 paper [4], allowing us to describe

Example of a citation snippet: "Their keenness to help women in their families and villages to access information (the girls consider) valuable for their health is representative of the quality of advocacy that *Bardzell [2]* suggests as being a necessary component of Feminist HCI."

In this snippet, 'Bardzell [2]' is cited and the statement details how authors built on her work.

ways in which feminist theories are cited and utilized in HCI research. In addition to a citation analysis based on Harwood's citation function typology [13], we also conducted a thematic analysis using two *a priori* frameworks— contribution criteria and feminist interaction design qualities— proposed in [4] to illustrate how Bardzell's contributions have been extended or implemented in HCI research.

Data Collection
To collect published work citing Bardzell's 2010 paper, we retrieved a list of citations of this paper from the ACM Digital Library. At the time of writing, this database included 200 citations of the Bardzell 2010 paper. To further limit this potential dataset, we created inclusion criteria that required the citing paper to be published in the CHI (Human Factors in Computing Systems) (n= 89) and DIS (Designing Interactive Systems) (n=13) conferences. These two conferences were selected because they had the highest number of Bardzell 2010 citations coupled with the highest likelihood of engagement in these critical frameworks. This resulted in 70 conference proceedings from 2010 to 2019.

These conference proceedings were further analyzed to collect *citation snippets*, which were copied into the database. By citation snippets, we refer to any statements that directly cited Bardzell's 2010 work (see example in sidebar). In total, we collected 108 citation snippets (Mean=2, SD= 1.067) across the 70 conference proceedings. Snippets from papers that had more than five references of the 2010 paper (n=5; 7–11 snippets each) and papers that had the paper reference in the reference list but did not cite inline (n=1) were excluded from this list to avoid skewing the data or presenting outlier characteristics of how feminist theories (especially, those proposed in Bardzell's paper) were cited in HCI work. These snippets were our unit of analysis.

Data Analysis
Each citation snippet was coded using Harwood's typology of citation functions, as described in Table 1 [13]. These citation functions were not exclusively coded, resulting in the total sum of the occurrences not equaling the total number of snippets. These snippets were also coded using two frameworks from Bardzell's 2010 paper: Contribution Criteria and Feminist Interaction Design Qualities. Bardzell's frameworks were coded as 'used' and 'not used' for each citation snippet. If 'used', additional sub-codes from elements of the framework were coded to further the analysis. Once the coding was complete, descriptive statistics were calculated to present frequencies of citation functions and identify how the contribution criteria and feminist qualities were used.

Results
In this section, we present the quantitative results of the analysis in two different sections: 1) Results of Harwood's citation functions to present why and how Bardzell's work was cited; and 2) Bardzell's framework results to illustrate how the two frameworks proposed by Bardzell [4] were implemented (or not) in the published texts.

Harwood's Citation Functions
Figure 1 presents the distribution of the various Harwood's citation functions across the collected 108 citation snippets. The most common citation functions included giving credit (n=69), signposting (n=43), tying with their contribution (n=36), supporting their research aims (n=30), and showing something as topical in the field (n=28). Less frequently used functions included position[ing] their standpoints (n=23), engaging in the critical dialogue (n=21), and building on the proposed work (n=20). Other functions such as advertising, future reference and showcasing competence occurred less than ten times. These results show

Example snippet for 'credit' citation function: "Feminist perspectives can also inform the design of technologies to contribute toward gender equality [4]'

Example snippet for 'signposting' citation function: "This research draws on the growing awareness among HCI scholars of the need for more nuanced considerations of gender and the careful application of feminist theories in sociotechnical research [e.g., 2,3,16,17,26]. "
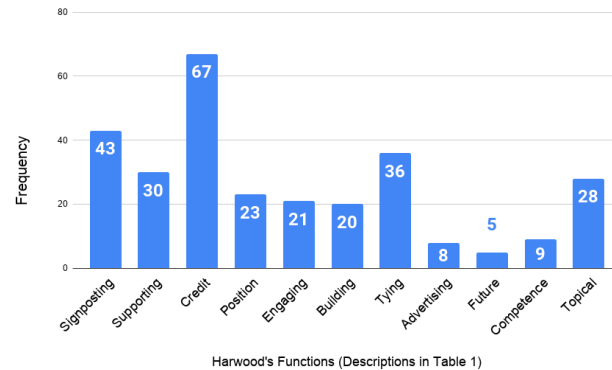

Figure 1: Distribution of Harwood Citation Functions [13] across n= 108 citation snippets.

that citations of the 2010 paper have primarily been used to *credit* the contribution to the field, often *signposting* the work to acknowledge Bardzell's contribution among other works that engage with feminist theories in HCI. This analysis of citation functions, along with a substantial total citation count (n= 406 in Google Scholar as of writing) for the paper, shows that HCI researchers have regularly drawn upon feminist theories in ways consistent with the 'turn to critical[ity].' However, these results do not clearly help us identify or describe the adoption of feminist theories in these published texts. Additionally, these high frequencies on crediting and using Bardzell's work to support research aims does not directly resonate with authors' precise implementation or operationalization of the proposed frameworks from the 2010 paper as seen in Figure 2.
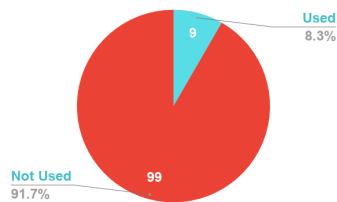
Bardzell's Frameworks Implementation
In this section, we present how the two referenced frameworks from the 2010 paper were implemented (or not) in

the cited work. As presented in Figure 2(a), there were 18 citation snippets across 11 papers that referenced Bardzell's 'contribution criteria.' This means that these works have used feminist concepts as theory (n=4), methodology (n=11), or to support user research (n=5) or evaluation (n=2). Authors have primarily used feminist theories to support methodology, defined as an "*incorporat[ion of] feminism in user research, iterative design, and evaluation methodologies to broaden their repertoire for different contexts and situations*" [4]. Across various citation snippets, feminist methodology is used to identify critical alternatives as seen in [10]: "Our work makes what Bardzell defines as a critique-based contribution [. . .] by 'analyz[ing] designs. . . to expose their unintended consequences', such as the downsides to normative design choices"; for practicing iterative designing methods for specific contexts as seen in [20]: "*Using a feminist HCI lens [. . .], we investigate how these services could be redesigned to provide an equitable and inclusive platform to women*"; and adopting the characteristics of feminist methodologies in their research practice and philosophy as illustrated by [8]: "*Feminist concepts (e.g. [. . .]) allowed us to more deeply understand how our method is collaborative, post-functional, situated, and partial.*"

As presented in Figure 2(b), only 9 (8.33%) citation snippets directly referenced Bardzell's interaction qualities. Authors who cited these qualities partially used the six qualities, either using one or two at a time. The most frequently used quality out of nine citation snippets was pluralism (n= 6), with a goal of advocating for incorporating multiple perspectives in research agenda, such as different gender identities and contexts (e.g., home, stores, shopping malls, gym). In one example from [21], the authors represent 'gender identity' as pluralistic: "*This kind of approach has a pluralism theme such as advocated by Bardzell [. . .], i.e., the idea that most individuals do not fit neatly into a single gen-*
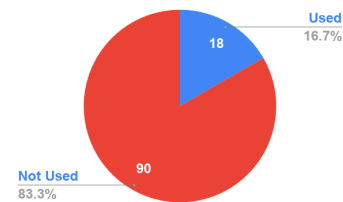
(a) Bardzell's Contribution Criteria Framework

(b) Bardzell's Feminist Interaction Qualities Framework

Figure 2: Distribution of usage of Bardzell's Contribution and Feminist Interaction Qualities Frameworks (*out of total n=108 citation snippets*)

der bin [. . .], and that removing barriers can help everyone regardless of the gender with which they identify.*" Through this snippet, the authors were 'credit[ing]' as well as 'engage[ing]' in a critical dialogue about the pluralism of gender identities. Another interaction quality that was more frequently used was advocacy (n=4). In one example [23], the authors reference gender identity and social change with the goal of providing agency to the marginalized groups in a context: "*This possibility aligns with the feminist quality of advocacy that Bardzell proposed for shaping interaction design [. . .]. In our work, exploring processes instead of users' identities allowed us to see the girls of Baruipur as agents of change, and further explore ways in which technology might support them in their resistance.*" Through this snippet, the authors were supporting their work by using 'advocacy' as a theoretical framework to expose the backgrounded identities of "girls of Baruipur(a village)" as agents of social change, to further explore how technology can help them in this social change.

These quantitative results provide evidence that Bardzell's frameworks are not currently extensively or directly used in published HCI research and were primarily used only to signpost or credit the work as pioneering work in the field that intersects feminism and HCI. However, the examples we provide which *do* use the framework demonstrate the utility of these frameworks in foregrounding the critical dimensions of HCI work, and help to elucidate what more direct engagement with feminist frameworks in HCI scholarship might look like.

Discussion
Through the findings, it is evident that authors' engagement with feminist concepts in HCI research has primarily been *one-dimensional*. We provide evidence that HCI research has mostly signposted Bardzell's work, giving her credit for

the concept of 'Feminist HCI.' However, these citations patterns points towards *potential* for deeper engagement with feminist theories and methods, alongside a larger constellation of critical theory-inspired approaches. Our goal in sharing this analysis is not to critique HCI research practices or seek to undermine critically-focused research, but rather to highlight opportunities to more fully build upon feminist theories in order to advance HCI discourses for research, practice, and pedagogy.

In our analysis approach, we have excluded citation snippets from papers which extensively used Bardzell's frameworks to avoid skewing our results. These published texts [9, 11, 14, 15, 17] primarily used Bardzell's frameworks to define their *contribution* to the field through their *methodology* or *user evaluation* and several extensively implemented the *feminist interaction design qualities* in their work as their analysis framework or for creative design interventions. For example, in the context of public health, and following the methodology of *feminist reflexivity* proposed by Bardzell's framework and explicitly drawing from her feminist qualities of interaction design such as " pluralism, participation, advocacy, and ecology," work done by Kumar and Anderson [15] uncovered channels of agency women possess despite the patriarchal and oppressed front of their communities. In another example, Fiesler et al. [11] used Bardzell's approach of *feminist commitment* and *reflexivity* as a theoretical framework to analyze the concealed structure embedded in formation of a community called 'Archive of Our Own' (AO3). Taking the feminist interaction design qualities as an *evaluation* framework, Fiesler and colleagues [11] have captured the philosophy of AO3's design embedded in core principles of Feminist HCI. This work provides an example on how HCI researchers or designers can implement Bardzell's frameworks to design for the empowerment of communities. Similarly, Karusala and Kumar's [14] work

used Bardzell's feminist interaction qualities framework to evaluate and propose design interventions for technology for women safety. These research examples—taken together—show potential in improving design for society, well-being, inclusion, and collective good using a feminist foundation. This pragmatic utilization and potential extension of Bardzell's frameworks aligns with contemporary notions of ethics and values [19] and demonstrates the methodological and theoretical distinctives of third wave research in 'turn[ing] to criticality' [18]. These examples with high utilization of Bardzell's frameworks exemplify an ethical focus that is pragmatic, forward-looking, and change-making, working to foresee and remediate the potential impact of technology on society and well-being.

Through these instances we can see that use of feminist theory in HCI research—as exemplified by citations of Bardzell's pioneering text—has the potential to identify and disrupt hegemonic structures, for example, by giving voice to the users through participatory approaches and content generation on technology platforms to present their frame of thought in a way that is more public facing and liberating than before. The citations practices we have identified provide several implications for future research and design practice. **For HCI researchers**, new avenues of building theory and forms of methodology can be drawn from Bardzell's contribution framework. Through our findings, it was evident that these critical frameworks proposed by Bardzell were not well utilized in the data set, but research which implemented and used the frameworks presented effective results in the context of designing, building, conceptualizing or positioning technology. More research that explicitly builds on these frameworks may continue to deepen feminist approaches to engagement with scholarship. **For HCI practitioners,** our findings show the potential of how technology can give voice to feminist concepts in many different ways such as propagating theories through approachable mediums, building products that are inclusive, enhancing creativity, and potential of every individual to represent themselves. Further utilization of these frameworks to identify and act upon opportunities to enhance or reframe design outcomes, using the interaction qualities proposed by Bardzell. **For HCI pedagogy**, further engagement with feminist concepts–both pragmatically through interaction qualities and methodologically through the contribution criteria framework–may aid in building students' design sensitivity, empathy, and sense of social responsibility, leading to more ethical and emancipatory design practices.

Conclusion

In this late-breaking work, we have presented a citation analysis of 70 published texts that cited Shaowen Bardzell's 2010 'Feminist HCI' paper [4]. Based on our analysis using Harwood's citation typology [13], most work cited this paper to *credit* Bardzell's translation of key feminist concepts and *signposted* to signal to readers what paradigm of HCI scholarship was foregrounded. Bardzell's proposed frameworks of contribution criteria and feminist interaction qualities were rarely used, showing potential for improvement of conceptual precision in future research and design outcomes. Based on these findings, we have identified substantial potential for further engagement with feminist theories, including the broadening of theoretical perspectives and landscapes for multiple HCI audiences, including the enhancement of interaction design paradigms, and the creation and adoption of methods to improve design sensitivity and social responsibility.

Acknowledgments

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